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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/067,075	02/04/2002	Toshihiro Omi	NGB-12970	4068
40854	7590	01/24/2005	EXAMINER	
RANKIN, HILL, PORTER & CLARK LLP			YAM, STEPHEN K	
4080 ERIE STREET			ART UNIT	
WILLOUGHBY, OH 44094-7836			PAPER NUMBER	
			2878	

DATE MAILED: 01/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

cf

<b>Office Action Summary</b>	<b>Application No.</b> 10/067,075	<b>Applicant(s)</b> OMI, TOSHIHIRO	
	<b>Examiner</b> Stephen Yam	<b>Art Unit</b> 2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 May 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>0504</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasuda JP 01-097813 (see attached translation) in view of Sawada et al. US Patent No. 5,113,071.

Regarding Claims 1 and 4-6, Yasuda teaches an emitting light source apparatus of a reflection-type for use in an optical encoder which applies light to a reflecting scale (16) having an optical grating (see Page 9, lines 21-22) formed along an axis of measurement and which receives the reflected light from the scale with a light-receiving element (26) to output a displacement signal (see Page 10, lines 9-10), said apparatus comprising a lead frame (30) disposed opposite to said scale, a light-emitting chip (24) (see Page 11, lines 4-5) mounted on said leadframe, said light-emitting chip having a light-emitting surface (left to right, and orthogonal to the view of the drawing) substantially orthogonal to an optical grating surface of said scale (see Fig. 1) and in a direction of the optical grating (see Fig. 1 and 2), and a molded transparent resin (32) sealing both the light-emitting chip and said leadframe, wherein said transparent resin includes a first optical element (28) provided at an end face of said molded transparent resin which faces the light-emitting surface of said light-emitting chip (see Fig. 2), and a second optical element (29) provided at the other end face of said molded transparent resin which is remote from the light-emitting surface of said light-emitting chip (see Fig. 2), said first

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optical element reflecting the light from said light-emitting chip substantially parallel to the optical grating surface and in a direction orthogonal to the direction of the optical grating (see Fig. 1 and 2), said second optical element reflecting the parallel light from said first optical element toward the optical grating and illuminating the optical grating over a specified area (see Fig. 2) in the direction of the optical grating on the optical grating as the reflected parallel light is directed toward the optical grating. Regarding Claim 4, Yasuda teaches said first optical element includes a spherical or aspheric lens (28) having the focus at said light-emitting chip (see Fig. 2). Regarding Claim 5, Yasuda teaches a reflective film formed on an outside surface of said first or second optical element (see Page 11, lines 16-20). Regarding Claim 6, Yasuda teaches said light-receiving element formed integrally to the said emitting light source apparatus (see Page 17, lines 18-20). Yasuda does not teach the reflected parallel light *converged* toward the optical grating. Sawada et al. teach (see Fig. 5) a similar device, with a second optical element (54a, 56b) reflecting light (from (52b)) that is parallel to the surface of an optical grating (32) (see Fig. 5) toward the optical grating, with the reflected parallel light (off (54a)) converged (using (56a/56b)) (see Col. 5, lines 52-55) toward the optical grating. It would have been obvious to one of ordinary skill in the art at the time the invention was made to converge the parallel light toward the optical grating as taught by Sawada et al. in the device of Yasuda, to provide increased light intensity for improved detection contrast.

Regarding Claim 2, Yasuda in view of Sawada et al. teach the apparatus in Claim 1, according to the appropriate paragraph above. Yasuda also teaches said second optical element reflecting the parallel light from said first optical element toward the optical grating (see Fig. 2) and illuminating the optical grating over an area taller than a height of said light-receiving

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element as said reflected parallel light is directed toward the optical grating. Yasuda does not teach illuminating the optical grating over an area *wider* than a *length* of the light-receiving element in the direction of the optical grating. It is well known in the art in an optical sensor to provide illumination for a detection target over a greater area than the view of the detector, to ensure that the entire viewing window of the detector is fully illuminated. It would have been obvious to one of ordinary skill in the art at the time the invention was made to illuminate the grating over an area *wider* than a *length* of the light-receiving element in the direction of the optical grating, in the apparatus of Yasuda in view of Sawada et al., to ensure complete illumination of the entire detection window for maximal detection contrast.

Regarding Claim 3, Yasuda in view of Sawada et al. teach the apparatus in Claim 1, according to the appropriate paragraph above. Yasuda does not teach the second optical element including a planoconvex cylindrical lens consisting of a flat surface on a side of the lens on which the parallel light from said first optical element is incident and a convex spherical surface on the other side of the lens. Sawada et al. teach (see Fig. 5) the second optical element including a planoconvex lens (56b) consisting of a flat surface (surface of (56b) facing (54c)) on a side (side facing (54c)) of the lens on which the parallel light from said first optical element is incident and a convex spherical surface (surface facing (32)) (see Fig. 5) on the other side (side facing (32)) of the lens. Yasuda and Sawada et al. do not teach the lens as a cylindrical lens. It is well known in the art to use to utilize a cylindrical lens, to provide a larger volume for greater protection from physical damage. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the planoconvex lens of Sawada et al. in the second optical element, and to utilize a cylindrical lens for the lens in the apparatus of Yasuda, to

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provide effective light convergence onto the optical grating and to enhance the durability of the apparatus.

***Conclusion***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen Yam whose telephone number is (571)272-2449. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571)272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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